XV.—Additions to the Crustacea and Pycnogonida of the Bermudas. By A. E. Verrill.

CRUSTACEA.

The collection of Crustacea obtained by the Yale party in 1898 contains nearly all the species recorded from there by previous writers, and many that are new to the fauna. Of marine Isopoda and Amphipoda about 50 species were collected, but they have not yet been carefully studied. Very few of them have been reported from Bermuda.

Lists of the Bermuda decapod Crustacea have been published by J. M. Jones,* A. Heilprin, and in the several Reports on the Zoölogy of the Challenger Expedition, but they are all quite incomplete. Mr. W. M. Rankin† has very recently published a more extensive catalogue of the Bermuda Decapoda. His list contains 56 species of this group.

Our 1898 collection and those collected by J. M. Jones ; G. Brown Goode ; C. Hartt Merriam ; F. V. Hamlin and others, now in the Yale Museum, include about 20 species of Decapoda not contained in Mr. Rankin's list, so that the total number now known is about 75. Nearly all of these are also West Indian species.

To these may be added *Geryon incertus* Miers, dredged in deep water off Bermuda by the Challenger Exp.

A number of the smaller and more difficult species have been sent to Miss M. J. Rathbun of the U. S. National Museum for determination, and to her I am much indebted for aid of this kind, as indicated under particular species. A few are still undetermined.

---

* Mr. Jones sent to the Yale Museum, about 1877, a valuable collection of Bermuda Crustacea collected by himself, during several years of residence there. It contains a large example of the great land crab, *Cardisoma Guanhumi*. I was informed that this species still occurs at Cooper's Island, but not elsewhere. We had no opportunity to collect at that locality.

† Annals New York Acad. Sci., xii, No. 12, pp. 521–548, May, 1900. This list is based on the collections made by Prof. Bristol's parties in 1897–1898, but it includes, also, those that were collected by Mr. G. Brown Goode, and most of those obtained by the Challenger Expedition; some that have been enumerated by Heilprin and others are omitted.

Additional Decapod Crustacea.

BRACHYURA.

GRAPSIDÆ.

Geograpsus lividus (Edw.) Stimp.

Grapsus lividus A. Milne Edw., Hist. Nat. des Crust., ii, p. 85, 1837; Melang. Carcinol., p. 135.
Geograpsus lividus Stimpson, Proc. Acad. Nat. Sci., Philad., 1858, p. 101; Notes on North Amer. Crust., Annals Lyc. Nat. Hist., N. York, vii, p. 230, 1860. Kingsley, Proc. Acad. Nat. Sci., Philad., p. 195, 1880 (description).

This species, in life, has the carapax light brownish yellow or pale brown, marked irregularly with brownish black bands and streaks.

Two adult specimens were taken in 1898; Mr. Goode also obtained one example. West Indies.

A closely related form (*G. occidentalis* St.) considered identical by Kingsley, occurs on the west coast of America, from Cape St. Lucas to Chili.

Sesarma Miersi Rathbun.

Synopsis Amer. Sesarmæ, Proc. Biol. Soc. Wash., xi, p. 91, 1897.

Miss Rathbun refers one young specimen to this species with some doubt (coll. 1898). Bahamas,—Rathbun.

Sesarma Ricordi M. Edw.

Ann. Sci. Nat., Ser. 3, vol. xx, p. 183, 1853. Kingsley, Proc. Acad. Nat. Sci., Philad., for 1880, p. 217. Rathbun, Synopsis Sesarmæ, p. 91.

Miss M. J. Rathbun identifies the very common Bermuda *Sesarma* as this species. It is doubtless listed by Mr. Rankin and others as *S. cinerea*. Whether the true *S. cinerea* is also found there is doubtful. Our numerous examples all appear to be of one species, though they vary much in color. Common on the shores under stones and among dead algæ, nearly up to high-tide mark.

Plagusia depressa (Fabr.) Say.

Cancer depressus Fabr., Ent. Syst., Supl., p. 406, 1775.
Plagusia Sayi DeKay, N. York Fauna, p. 16. Stimpson, Notes on N. Amer. Crust., i, p. 18 [64]; ii, p. 104 [232].
Plagusia depressa Say, Journ. Acad. Nat. Sci. Philad., i, p. 100, 1817. Rathbun, Dec. Crust. W. Africa, p. 281, 1900 (distribution). Miers, Rep. Voy. Chall., xvii, p. 272, 1886.

This species is commonly seen running with great rapidity over the rough ledges and cliffs, above high-tide mark, in the same manner as *Gapsus grapsus*, but it is even more alert and swifter in its motions, so that its capture is difficult.

It was taken by us on Castle Island and Bailey Bay Island, in 1898.

Percnon planissimum (Herbst).

Cancer planissimus Herbst, Naturh. Krebb., p. 3, pl. lix, fig. 3, 1804.
Acanthopus planissimus Stimpson, op. cit., p. 104 [242], 1860.
Acanthopus Gibbesii Milne Edw., Mel. Carcin., p. 146.
Leiolophus planissimus Miers, Catal. Crust. N. Y., p. 46, 1876.
Percnon planissimum Rathbun, Dec. Crust. W. Africa, Proc. U. S. Nat. Mus., xxii, p. 281, 1900.

Very common in some localities under stones at low-tide; a situation for which its very flat body is admirably adapted. Also received from J. M. Jones, Mr. Goode and others.

CANCRIDÆ.

Leptodius Floridanus (Gibbes) A. M. Edw.

Chlorodius Floridanus Gibbes, Proc. Am. Assoc. Adv. Sci., iii, p. 175, 1850. Stimpson, Notes on N. Amer. Crust., Annals Lyc. Nat. Hist. N. York, vii, p. 209. S. I. Smith, Trans. Conn. Acad., ii, p. 3, 1869.
Leptodius Floridanus A. M. Edw., Miss. Sci. Mex., v, vol. i, p. 268, pl. xlix, fig. 2, 1873.

Several specimens were collected in 1898. It ranges to Aspinwall and Brazil.

Heteractæa ceratopus (Stimp.) A. M. Edw.

Pilumnus ceratopus Stimpson, Annals Lyc. Nat. Hist. New York, vii, p. 215 [87], 1862; and x, 1871.
Heteractæa ceratopus A. Milne-Edw., Sci. Miss. Mexico, part v, i, p. 300, pl. lii, figs. 3-3*d*.

One adult example taken in shallow water, 1898. Florida to Guadeloupe.

Xanthodius parvulus (Fabr.) t. Rathbun.

Chlorodius Americanus Saussure, Mem. de la Soc. Phys. et d'Hist. Nat. Genève, vol. xiv, p. 430, pl. i, fig. 5, 1857.
Xanthodius Americanus Stimp., Notes on N. Amer. Crust., Ann. Lyc. Nat. Hist., N. York, vii, p. 81, 1860.
Leptodius Americanus A. Milne Edw., Miss. Sci. Mex., v, i, p. 269, 1873.

A single adult specimen,—coll. F. V. Hamlin. Florida reefs to the Antilles. Hayti (Saussure).

Miss M. J. Rathbun informs me that she has identified this species by comparison with the original type of *Cancer parvulus* Fabr. in the Museum of Copenhagen, and that it belongs to the genus *Xanthodius*.

Eupanopeus occidentalis (Saussure) Rathbun.

Panopeus occidentalis Saussure, Rev. et Mag. Zoöl., ii, ix, p. 502, 1857; Mem. Soc. Phys. Genève, xiv, p. 431, pl. i, fig. 6, 1857. A. M. Edw., Miss. Sci., Mexico, v, i, p. 310, 1880. Benedict and Rathb., Proc. U. S. Nat. Mus., xiv, p. 360, 1891.
Eupanopeus occidentalis Rath., Bull. Labr. N. Hist. Univ., Iowa, iv, p. 273, 1898.

Miss Rathbun identifies one young example (No. 3021, Yale Mus.) as this species. South Carolina and Florida to Trinidad.

Eupanopeus serratus (Saussure) Rathbun.

Panopeus serratus Saussure, Rev. et Mag. Zoöl., ii, ix, p. 502, 1857; Mem. Soc. Phys. Genève, xiv, p. 432, pl. i, fig. 7, 1857. S. I. Smith, Proc. Boston Soc. Nat. Hist., xii, p. 280, 1869. A. M. Edw., Miss. Sci. Mexico, v, i, p. 311, 1880. Benedict and Rathbun, The Genus Panopeus, Proc. U. S. Nat. Mus., xiv, p. 371, 1891.
Panopeus Herbstii, var. *serratus* Miers, Rep. Voy. Chall. Zoöl., xvii, p. 129, 1886.
Eupanopeus serratus Rathbun, Bull. Labr. Nat. Hist., Univ. of Iowa, iv, p. 273, 1898.

A species was recorded under this name from Bermuda by Heilprin, and by Miers, but at that time the much more common species (*E. Bermudensis* Ben. and Rath., 1891), had not been distinguished, so that it is uncertain whether he really had this species. Rankin did not find it in the collections studied by him.

An example of this species from our collection (No. 3119), has been identified by Miss Rathbun by direct comparison with a photograph of Saussure's type.

Liomera dispar (Stimp.) Rathbun.

Chlorodius dispar Stimp., Prelim. Rep. on Crust. Gulf Stream, Bull. Mus. Comp. Zoöl., ii, p. 140.
Leptodius dispar A. M. Edw., Miss. Sci., Mex., v, i, p. 271, 1880.

Two males of this rare species have been identified by Miss Rathbun (No. 3176, Yale Mus.).

Pilumnus spinipes (A. M. Edw.) Rathbun.

Micropanope spinipes A. M. Edw., Miss. Sci., Mexico, v, i, p. 326, pl. liv, fig. 3, 1880.
Pilumnus spinipes Rathbun, Bull. Labr. Nat. Hist. Univ. Iowa, iv, p. 264, 1898.

Two specimens of this rare species were taken by our party, in 1898. Cuba (Edw.).

PORTUNIDÆ.

Portunus (Achelous) Ordwayi (Stimp.).

Achelous Ordwayi Stimpson, Notes on N. Amer. Crust., ii, p. 96 [224], 1860. S. I. Smith, Trans. Conn. Acad. Sci., ii, p. 9, 1869 (descr.).

Several specimens, mostly collected by J. M. Jones, are in the Yale Museum. They have been determined by Miss Rathbun. It was not taken by our party. It ranges southward to Brazil (Smith).

MAIIDÆ.

Mithrax depressus A. M. Edw.

Mithrax depressus A. Milne Edw., Mission Sci., Mexico, part v, i, p. 96, pl. xx, fig. 4, 1880.

A single young specimen (No. 3019, Yale Mus.) has been identified as this species by Miss Rathbun. Florida to Guadeloupe.

Stenorhynchus sagittarius (Fabr., 1793).

Leptopodia sagittaria Leach, Zoöl. Miscell., ii, pl. lxvii, 1816. Latreille, Encycl. Meth., Insects, pl. 299, fig. 1, 1818. Desm., Consid. Crust., p. 155, pl. xvi, fig. 2, 1825. Latr. in R. Anim., Cuvier, ed. ii, pl. iv, 1829. Milne Edw., Ill. ed. Cuv., Crust., pl. xxxvi, fig. 1. A. M. Edw., Mission Sci., Mex., part v, vol. i, p. 172, 1873.

Mr. Goode, while in Bermuda, sent to Prof. S. I. Smith a characteristic drawing of this species made from a specimen in the local collection of the late Mr. Bartram of St. Georges. This collection

now belongs to the Bermuda government, but was mostly inaccessible at the time of our visit. The drawing, however, leaves no doubt of the identification.

Cape Hatteras to the West Indies and to Bahia, Brazil; Madeira; Cape Verde and Canary Is.; West Africa; west coast of America.

Chorinus heros (Herbst) Leach.

Cancer heros Herbst, Krabben und Krebse, pl. xlii, fig. 1; pl. xviii, fig. 102.
Chorinus heros M. Edw., in Cuvier, Illust. ed., Crust., pl. xxix, fig. 2. A. M. Edw., Miss. Scient., Mex., part v, vol. i, p. 86, 1873.

One specimen (No. 3126, Yale Mus., coll. J. M. Jones), determined by Miss Rathbun. Key West to Barbadoes. Rare.

ANOMURA.

PAGURIDÆ.

Calcinus sulcatus (M. Edw.).

Pagurus sulcatus M. Edw., Ann. Sci. Nat., ser. 2, vi, p. 279, 1836; Hist. Nat. Crust., ii, p. 230.
Calcinus sulcatus Stimpson, Proc. Acad. Nat. Sci., Philad., 1858, p. 234. S. I. Smith, These Trans., ii, p. 17, 1869.

Several specimens of this species are in the collection, determined by Miss Rathbun. It ranges southward to Brazil (Smith).

Petrocheirus insignis (Sauss.).

Pagurus insignis Saussure.

Two specimens from our collection have been determined by Miss Rathbun. One was collected many years ago by Mr. F. V. Hamlin.

Paguristes (?), sp. indet.

Six specimens of an undetermined species, which Miss Rathbun thinks may be undescribed, are in the Yale Museum, collected by Mr. Hamlin.

MACRURA.

ALPHEIDÆ.

Alpheus formosus Gibbes, Proc. Amer. Assoc., iii, 1851.

Alpheus Poeyi Guerin, Sagra's Hist. isle de Cuba, l, p. xix, pl. ii, fig. 10, 10*a*, 1857.

This species is one of the most common in cavities in dead coral. Recorded also by Heilprin. Possibly *A. Websteri* Kingsley is the same.

Synalpheus lævimanus, longicarpus (Herrick).

This species has been identified by Miss M. J. Rathbun, from specimens in the U. S. Nat. Museum.

Athanas Ortmanni Rankin.

Annals New York Acad. Sci., xi, p. 251, pl. xxx, fig. 7, 1898.

Identified by Miss M. J. Rathbun from specimens in the U. S. Nat. Museum.

PALÆMONIDÆ.

Palæmon Savignyi (Bate).

Brachycarpus Savignyi Bate, Macrura, Voy. Challenger, xxiv, p. 795, pl. cxxix, 1888.

Palæmon Savignyi Rankin, Crust. Bahamas, Annals New York Acad. Sci., xi, p. 244, 1898.

Reported from Bermuda by Bate; from Nassau, N. P. by Rankin.

Latreutes ensiferus (M. Edw.) Stimp.

Latreutes ensiferus Stimpson, Proc. Acad. Nat. Sci., Philad., p. 27, 1860. Bate, Rep. Zoöl. Voy. Chall., xxiv, p. 583, pl. 104, figs. 1–1*g*.

Common among gulf-weed.

PONTONIDÆ.

Several specimens of an undetermined shrimp belonging to this family are in the Yale collection (No. 3080).

Periclimenes Americanus (Kings.) t. Rathbun.

Anchistia Americana Kingsley, Proc. Acad. Nat. Sci., Philad., 1878, p. 8; Bull. Essex Inst., x, p. 65.

Numerous Bermuda specimens of this species, from several different collections, are in the Yale Museum, determined by Prof. S. I. Smith and Miss Rathbun. It is common. Key West,—Kingsley.

PENÆIDÆ.

Penæus Braziliensis (Latr.).

Nouv. Dict. d'Hist. Nat., xxv, p. 154. M. Edw., Hist. Nat. Crust., ii, p. 414. Gibbes, Proc. Amer. Assoc. Adv. Sci., 1850, p. 198. Stimpson, Notes on N. Amer. Crust., iii, p. 132, 1871. Smith, These Trans., ii, p. 27.

A single specimen from Mr. Goode's collection. It ranges from New York to Bahia and Rio Grande do Sul, Brazil, and to West Africa.

Sicyonia dorsalis Kingsley.

Proc. Acad. Nat. Sci., Philad., 1878, p. 97; Bull. Essex Inst., x, p. 69.

One example determined by Miss Rathbun. It may, perhaps, be identical with "*S. carinata?*," recorded by Rankin. Florida,—Kingsley.

SCHIZOPODA.

MYSIDÆ.

Heteromysis Bermudensis G. O. Sars.

Rep. Zoöl. Voy. Challenger, xiii, p. 216, pl. xxxviii, figs. 1–7, 1885.

Shallow water with *Paranebalia longipes* (t. Sars).

PYCNOGONIDA.

No species of this group has hitherto been reported from Bermuda, so far as known to the writer. Our party obtained two small species in 1898.

Ammothea (?) rugulosa, sp. nov. **Ammothella,** subgenus nov.

Plate LXX. Figure 9.

A small rudely spinulose species covered with adhering dirt. Body elliptical of moderate width, abdomen small. Proboscis large, fusiform, much swollen in the middle, large at the distal end, longer than half the length of the body. Eye-tubercle rather large, subclavate, with a rather large, brown, 4-lobed eye-spot at the rounded tip. Legs crooked, covered with rough spinules; 3 basal joints short; 4th and 5th longer, a little swollen; 6th longer and more slender; 7th very short; 8th strongly curved; dactylus strong and much curved; two accessory claws and several smaller spinules. Palpi long and slender, tapered, extending much beyond proboscis, 10-jointed; 1st and 3d joints short; 2d and 4th long; last 6 subequal, very well defined, rather short; the four last fusiform, the terminal one a little the longer and thinner. Antennæ nearly as long as the proboscis, 3-jointed, spinulose, two basal joints long, 2d stouter, clavate; dactylus very small, forming a very small chela. Accessory legs nearly concealed by several clusters of eggs, 9-jointed, 2 basals and 3 terminals very short; 3–6 longer. Length of body and proboscis 2^{mm}; of proboscis 0.75^{mm}.

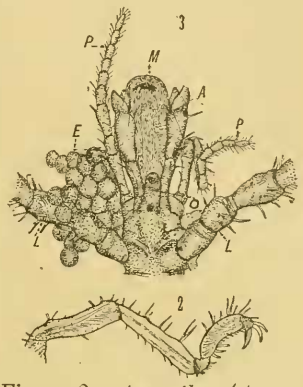


Figure 2.—*Ammothea* (*Ammothella*) *rugulosa;* part of leg much enlarged.

Figure 3.—The same. Anterior parts enlarged; A, antenna; P, palpus; M, mouth and proboscis; O, eye-tubercle; E, eggs; L, L. anterior legs.

One specimen, Bailey Bay, low-tide.

This species differs from typical *Ammothea* in having the palpi 10-jointed instead of 8-jointed. The number of joints in the accessory legs was not made out very clearly, but 9 joints were visible.

Achelia (?) gracilis, sp. nov.

Plate LXX. Figure 10.

A small, slender species, minutely spinulose, with very slender, moderately long legs. Body rather narrow-elliptical, proboscis rather large, fusiform, tapering to a small, rounded distal end, its aperture with curved, chitinous hooks. Antennæ short, almost rudimentary, apparently 2-jointed and minutely chelate. Eye-cone small, rather high and narrow, obtuse, oblong-conic with minute terminal papillæ; eyes very small, brown. Abdomen small, slender, slightly fusiform and turned up; bilobed at end.

Figure 4.—*Achelia? gracilis;* part of leg, much enlarged.

Legs slender, with a strong dactylus and accessory claws; 3 basal joints short; 4th much longer, decidedly swollen; 5th and 6th about as long and much more slender. Accessory legs slender, apparently 12-jointed, including a minute terminal joint with 2 claws; 11 joints distinct.

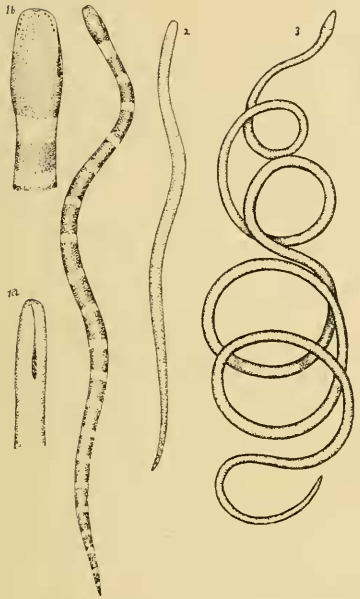
Palpi little longer than proboscis, not very slender, spinulose, apparently 8-jointed or perhaps obscurely 9-jointed; 2d and 4th joints long; 5th (6th?) and last very short; next to last a little longer, rather thick (5th and 6th perhaps not distinct).

Length of body and proboscis, 1.25^{mm}.

One specimen, Flatts Inlet, dredged in shallow water.

This does not belong to restricted *Achelia*, on account of having only 8 definite palpal joints (instead of 9), and apparently 12 in the accessory legs (instead of 10); and in having the antennæ obscurely chelate.

1

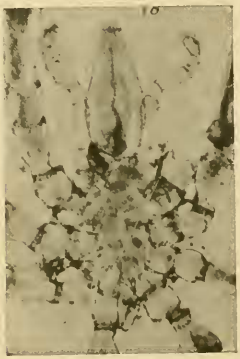


8

4

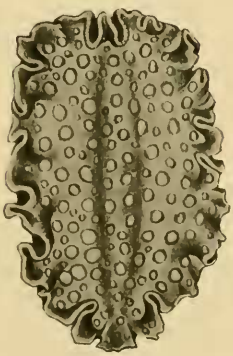
9

10



5

6



6a

A. Hyatt Verrill from nature.

Bermuda Marine Invertebrates.